

# Work Order ID 53750

November 17, 2009 7:40:30 AM



Page 1

Item ID: D6104-003

Accept



Setup Start



Revision ID: B

Stop



Item Name: Round Billet, 17-4

Start Date: 11/17/09 Start Qty: 20.00



Cust Item ID:

Required Date: 12/01/09 Req'd Qty: 20.00



Customer:

Reference:

Approvals: Process Plan: CG

Date: 09/11/17 Tooling:

Date:

Run Start



QC:

Date: SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D6104

Rev B

100

0.00



PURCHASING

Purchasing

Memo

0.00

CG 09/11/17

20

Purchasing

Issue P/O: 10773 (a) Description: S.S round billet (b) Ø3.25" x 3.80" long (c) Tolerance on all dimensions are +0.030"/-0.000" (d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630) (e) One blank makes 2 parts (f) Material certification required

110

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

Ensure material certification is attached

CG 09/11/27 (20)

120

QC6- Inspect dimensions to drawing

0.00



QC

Memo

0.00

Quality Control

Ensure Material certification comply to Dwg D6104

ant 09/12/01

20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Work Order ID 53750

November 17, 2009 7:40:30 AM



Page 2

Item ID: D6104-003

Accept



Setup Start



Revision ID: B

Stop



Item Name: Round Billet, 17-4

Start Date: 11/17/09 Start Qty: 20.00



Cust Item ID:

Required Date: 12/01/09 Req'd Qty: 20.00



Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <i>MAT</i>	0.00	<i>MF 09/12/01</i>			<i>20</i>			
Packaging	Memo	0.00							
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00							
Quality Control									

*09/12/01* *[Signature]*

*MF 09-12-01*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Picklist Print

November 17, 2009 7:40:30 AM

Page 1

Work Order ID: 53750

Parent Item: D6104-003RevB

Parent Item Name: Round Billet, 17-4



Comments:

Start Date: 11/17/09

Required Date: 12/01/09

Start Qty: 20.00

Required Qty: 20.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6104-003PRevB		Purchased	No			110	Each	0.0000	20.0000			
										<div>1/29/27</div> <div>(20)</div>		
17-4 SS Roundbar 3.25"OD												

11/17/09 (20)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

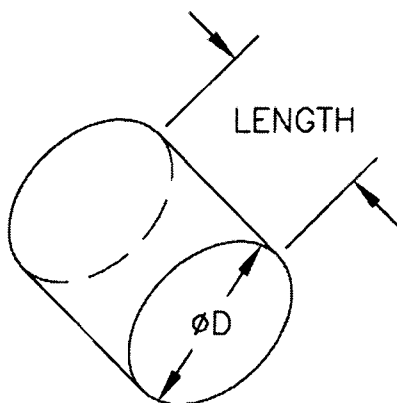
**NOTE:** Date & initial all entries



DESIGN <i>ET</i>	DRAWN BY <i>[Signature]</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED  
02.11.29 *[Signature]*

## SPECIFICATION CONTROL DRAWING



SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 53750  
*C209/11/17*

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRC)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

*mt 69/02/01*

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**Castle Metals®**

A. M. Castle &amp; Co.

**PACKING SLIP**

Page 1 of 1

Pack Slip No:8125356

<b>Ship From:</b> Castle Metals MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		<b>Sold To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		<b>Ship To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		<b>Deliver To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
<b>Date Shipped</b> 26-NOV-09	<b>F.O.B.</b> ORIGIN	<b>Freight Terms</b> Prepaid		<b>Carrier</b> MANITOULIN	<b>BOL No</b> 137884-2	<b>Delivery No</b> 8125356	

<b>Shipment Details</b>	<b>Final Destination Branch - MON</b>
-------------------------	---------------------------------------

<b>Order No</b> 417080	<b>Line No</b> 2	<b>Item No</b> 42470.MO	<b>Description</b> 3.2500.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.132.0000-156.0000 CUT TO 3.8 IN ( + .1250/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AISI 630,AMS 5643,ASME SA564,ASTM A564,UNS S17400			
<b>Purchase Order No</b> 10773		<b>Part Number</b> YOUR ITEM NUMBER: D6104-003		<b>Ordered Qty</b> 20 PCS	<b>Invoice Qty</b> 20 PCS	<b>Backorder Qty</b>
<b>Details</b>						
<b>Mill</b>	<b>Heat Number</b> G15296	<b>Mech Id</b>	<b>PCS</b> 20	<b>Width (IN)</b>	<b>Length (IN)</b>	<b>Shipped Qty (LBS)</b> 178.67

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

This material has been received and inspected by:

Date:

*aml 09/12/01*



## CERTIFICATE OF TESTS

## ABNAHMEPRUEFZEUGNIS

## CERTIFICAT DE CONTROLE

CERT SERIAL# 000704565


**TALLEY METALS**  
 A Carpenter Company

Talley Metals Technology, Inc.

205 Talley Metals Lane

McBee, SC. 29101 Tel: (610) 208-2000 (800) 338-4592

10/19/09

CUSTOMER / BESTELLER / CLIENT

A.M. CASTLE &amp; CO

3400 N WOLF RD  
FRANKLIN PARK

IL 60131

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SELLER / VERKÄUFER / VENDEUR PAGE 1 OF 2

HVL

CUSTOMER ORDER NO./BESTELL.-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/POIDS
01-23669 17542	W55927	10/19/09	2355.000

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE :

G15296

 PRODUCT DESCRIPTION: TYPE 17-4 SOLUTION ANNEALED ROUGH TURNED  
 ----- PART NUMBER: IAC 42470

 SPECIFICATION: CASTLE 3174-10 CAP OF COND. H900 REV 8 (04/03/08)  
 ----- AMS 5643 REV R (02/ /08) (UNS S17400) (AISI 630)  
 ASTM-A564-04(2009)  
 ASME-SA564 2007 EDITION, 2009B ADDENDA

SIZE 3.250000 IN. ( 82.55 MM) RD BAR

PRIMARY HEAT CHEMISTRY (WT%) : (TEST METHOD IS SHOWN IN PARENTHESIS)

C (COM)	MN (XRF)	SI (XRF)	P (XRF)	S (COM)	CR (XRF)
0.03	0.56	0.40	0.030	0.025	.45
NI (XRF)	MO (XRF)	CU (XRF)	N (FUS)	CB (XRF)	TA (XRF)
4.24	0.30	3.74	0.027	0.24	LT .01

CB+TA  
0.25THIS HEAT MELTED BY THE ARC/AOD PROCESSES  
NO WELD REPAIR.MATERIAL IS MANUFACTURED FREE FROM MERCURY, RADIUM AND ALPHA SOURCE  
CONTAMINATION.

DISCS MACROETCHED AND APPROVED

HARDNESS AS SHIPPED, HBW - 363 (MIDRADIUS)

 MICROSTRUCTURE - FERRITE  
 MAGNETIC PARTICLE: FREQUENCY = 0 / SEVERITY = 0

SOLUTION ANNEALED - 1900 F, 1 HOUR - RAPID COOL

CONTINUED ON NEXT PAGE

## CERTIFICATE OF TESTS

## ABNAHMEPRUEFZEUGNIS

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CERT SERIAL# 000704565


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10/19/09

CUSTOMER / BESTELLER / CLIENT

SELLER / VERKÄUFER / VENDEUR PAGE 2 OF 2

A.M. CASTLE &amp; CO

3400 N WOLF RD  
FRANKLIN PARK

IL 60131

HVL

CUSTOMER ORDER NO./BESTELL-NR./N° DE COMMANDE	CARPENTER NO./WERKS-NR./N° DE REFERENCE INTERNE	DATE/DATUM/DATE	WEIGHT/GEWICHT/POIDS
01-23669 17542	W55927	10/19/09	2355.000

HEAT NUMBER / SCHMELZE-NR. / N° DE COULEE :

G15296

CAPABILITY

900 F ( 482 C ), 01 HR

AIR COOL

YIELD STRENGTH, (0.20 %) KSI (MPA) 182.0 ( 1255 )  
 TENSILE STRENGTH, KSI (MPA) 204.0 ( 1407 )  
 ELONGATION IN 2.00", % 13.0  
 REDUCTION OF AREA, % 44.0  
 HARDNESS , HBW 404.0

(CONVERTED FROM TENSILE STRENGTH)

NO WELD REPAIR PERFORMED  
 MATERIAL PRODUCED ON THIS ORDER WAS MELTED AND MANUFACTURED IN THE U.S.A.  
 MATERIAL HAS BEEN MELTED IN USA OR QUALIFYING COUNTRY TO DFARS REQUIRE-  
 MENTS 252.225-7014 WITH ALTERNATE 1 FOR QUALIFYING COUNTRY 225.872.1.  
 WE HEREBY CERTIFY THAT THE ABOVE TEST DATA ARE IN ACCORDANCE WITH THE  
 PURCHASE ORDER AND SPECIFICATION REQUIREMENTS. CERTIFICATE OF TEST IS  
 PREPARED IN ACCORDANCE WITH PARAGRAPH 3.1B OF EN 10204 (DIN50049)

STEPHANIE E. MCCULLUM  
 QUALITY ASSURANCE ENGINEER  
 CARPENTER TECHNOLOGY CORPORATION

Castle Metals FP

HEAT NUMBER G15296  
 MECHANICAL ID \_\_\_\_\_  
 ITEM CODE 42470  
 LOT NUMBER \_\_\_\_\_  
 PO NUMBER 17542  
 RECEIPT DATE 10-23-09  
 SUPPLIER Talley  
 SPECIFICATION \_\_\_\_\_  
 LCS N/O  
 COMMENT \_\_\_\_\_  
 APPROVED Am

*Am*  
 09/12/01

*Stephanie McCullum*